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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|------------------------------------|-------------|----------------------|---------------------|------------------|
| 09/994,179 | 11/26/2001 | Kazuaki Yazawa | 9792909-0434 | 9468 |
| 26263 | 7590 | 12/17/2003 | EXAMINER | |
| SONNENSCHIEIN NATH & ROSENTHAL LLP | | | CUEVAS, PEDRO J | |
| P.O. BOX 061080 | | | ART UNIT | |
| WACKER DRIVE STATION, SEARS TOWER | | | PAPER NUMBER | |
| CHICAGO, IL 60606-1080 | | | 2834 | |

DATE MAILED: 12/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 09/994,179 | YAZAWA ET AL. | |
| | Examiner | Art Unit | |
| | Pedro J. Cuevas | 2834 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed October 20, 2003 have been fully considered but they are not persuasive.
2. In response to applicant's arguments, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).
3. In response to applicant's arguments, the recitation "for dissipating heat from an electrical component and for generating energy", has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2834

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-5, 8-19, 21-23, and 30-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 3,609,991 to R. C. Chu et al. in view of U.S. Patent No. 4,392,062 to Bervig.

R. C. Chu et al. disclose the construction of a cooling system having thermally induced circulation having:

at least one fluid conduit (26, 30) configured to channel an electrically conductive fluid (28; column 4, lines 5-8) therethrough, thermally connected to at least one electrical component (14), and having a first column, a second column (46) oppositely positioned from the first column;

a volatile fluid (water, present in the fluorocarbon liquid mix) immersed in the fluid, which has a lower boiling point than the fluid, wherein the volatile fluid evaporates due to the heat transferred to the fluid to create gas bubbles in the fluid to further increase fluid flow of the fluid; and

a heat exchanger (24) operatively positioned on the second column, and thermally connected to the second column to transfer heat out of the fluid across heat fins (48) into a heat reservoir (water chiller – not shown).

However, it fails to disclose at least one energy converter operatively associated with the at least one fluid conduit to generate electricity from the fluid flow, coupled to the at least one fluid conduit downstream from the electrical component, and comprising a first electrode, a second electrode and a permanent magnet centrally displaced therebetween.

Art Unit: 2834

Bervig teach the construction of a fluid dynamic energy producing device having at least one energy converter (19) operatively associated with at least one fluid conduit (18) to generate electricity (generator 21) from the fluid flow, for the purpose of producing electrical energy by the circulation of a fluid in a dynamic circulation system.

It would have been obvious to one skilled in the art at the time the invention was made to use the fluid dynamic energy producing device disclosed by Bervig on the cooling system having thermally induced circulation disclosed by R. C. Chu et al. for the purpose of producing electrical energy by the circulation of a fluid in a dynamic circulation system.

6. With regards to claims 4 and 21, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use a liquid metal as the heat transporting liquid, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice.

In re Leshin, 125 USPQ 416.

7. With regards to claims 8, 11, 18, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the cooling system on electrical component's capable of generating heat at less than or equal to 150 °C, and gas bubbles have diameters less than half a smallest diameter of the fluid conduit, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

8. With regards to claims 30-36, it would have been obvious to one having ordinary skill in the art at the time the invention was made to develop a method of dissipating waste heat comprising the steps of:

channeling an fluid through a fluid conduit;

differentiating the density of the fluid by thermally connecting the fluid conduit to an electrical component generating heat causing the fluid to flow by convection through the fluid conduit;

dissipating heat from the fluid for maintaining the differential of the density;

transferring the energy to an electrical storage;

generating energy by directing the fluid through an energy converter; and

increasing the flow by immersing a volatile fluid in the fluid;

to appropriately use the claimed invention in order to obtain consistent and reliable heat removing results.

9. Claims 6, 7, 20, and 24-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 3,609,991 to R. C. Chu et al. in view of U.S. Patent No. 4,392,062 to Bervig as applied to claims 1-5, 8-19, 21-23, and 30-36 above, and further in view of U.S. Patent No. 5,441,102 to Burward-Hoy.

R. C. Chu et al. in view of Bervig disclose the construction of cooling system as described above, and a plurality of electrical leads transferring the electricity to an electrical storage.

However, it fails to disclose a first and second electrodes; and

a permanent magnet, the permanent magnet configured to create a magnetic field across the fluid whereby an electric potential is raised between the first electrode and the second electrode.

Burward-Hoy teach the construction of a heat exchanger for electronic equipment having a heat transfer apparatus (100) including:

a first and second electrodes (connecting the magnetic coil assembly 102);

a permanent magnet (column 3, lines 50-55), the permanent magnet configured to create a magnetic field across the fluid whereby an electric potential is raised between the first electrode and the second electrode for the purpose of causing the agitation of the heat transfer liquid in the heat pipe 103; and

a plurality of electrical leads coupled to the first electrode and the second electrode.

It would have been obvious to one skilled in the art at the time the invention was made to use the electrodes and permanent magnets disclosed by Burward-Hoy on the generator of the cooling system disclosed by R. C. Chu et al. in view of Bervig for the purpose of having a permanent magnet generator producing the electric energy.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892.

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

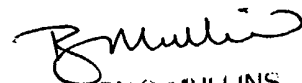
will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pedro J. Cuevas whose telephone number is (703) 308-4904. The examiner can normally be reached on M-F from 8:30 - 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor R. Ramirez can be reached on (703) 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Pedro J. Cuevas
December 3, 2003


BURTON S. MULLINS
PRIMARY EXAMINER